

**REQUEST FOR QUOTATIONS  
FOR  
GEOTECHNICAL INVESTIGATIONS  
FOR  
CLIMATE ADAPTIVE COMMUNITY BASED WATER HARVESTING  
PROJECT IN MEGHALAYA STATE**

***For projects governed by Procurement Regulations for ADB Borrowers: Goods, Works, Nonconsulting and Consulting Services (2017)***

**JULY 2023**

**[Note** (to be deleted when issuing the document): *This sample RFQ document is suitable for procuring standard or routine services, which, while requiring expert inputs, are based on recognized standard industry offerings that are readily available, and which do not require evaluation of tailored methodologies or techniques. The contracts are of small value, of short duration, and the service provider performs the services directly without sub-contractors or associates.*

*When included in a Procurement Plan as a result of a Strategic Planning Process, a threshold may be specified, and justification may be required for not using a more competitive procurement method such as open or limited competitive bidding.*

*This document may be translated and issued by the EA in its national language, but this English-language template shall be the basis for any ADB action.]*

# REQUEST FOR QUOTATION - SERVICES (RFQS)

Project Title: **GEOTECHNICAL INVESTIGATIONS for Climate Adaptive Community Based Water Harvesting Project in Meghalaya State**

Source of Funding: **Asian Development Bank (ADB)**

Contract Ref : MSWWDA/ADB-14/35

Date of Issue of Request: **04.08.2023**

To : \_\_\_\_\_

Sir/Madam:

1. The Meghalaya State Watershed and Wasteland Development Agency (MSWWDA) hereby requests you to submit price quotation/(s) for the performance of the services described in the **Scope of Services** attached as **Appendix A** in these documents. If you, however, have been associated with the preparation of this **Scope of Services** that is the subject of this request, you shall be disqualified.

To assist you in the preparation of your price quotation we enclose, in addition to the **Scope of Services**, the **Form of Quotation** and form of **Contract** are also attached.

2. If you/your firm, however, falls under any of the following conditions, your proposal shall not be considered:
  - (a) you/your firm are/is not a citizen/national of an ADB member country, or
  - (b) you/your firm have/has been associated with the firm that prepared the terms of reference or engaged in the preparation of the Project for which the contract that is subject of this request for quotations was identified, or
  - (c) you/your firm are/is owned by the Client, or
  - (d) you/your firm are/is currently sanctioned or temporarily suspended by the Asian Development Bank for a violation of its Anticorruption Policy (1998, as amended to date) or
  - (e) the contracting of services from your country or any payment to persons or entities in your country is prohibited in compliance with a decision of the United Nations Security Council under Chapter VII of the Charter of the United Nations.
3. To be qualified, you must have experience as a Service Provider of the services covered by this **Request for Quotation**. As evidence, you must attach a document of your experience as Service Provider in at least one contract in the last 3 years of a size and nature similar to the requirements of this contract.
4. Your quotation/(s) should be submitted in accordance with the following instructions, procedures, and the terms and conditions of the **Contract**.

## Preparation of Quotations

- (a) Your price quotation/(s) shall be for all the items as described in the **Scope of Services**, and submitted only in the attached **Form of Quotation**. The currency of quoted prices and payment shall be **INR**

- (b) You shall submit only one set of quotations for the above items. Your quotation must be typed or written in indelible ink and shall be signed by you or your authorized representative. Without a signature in your **Form of Quotation**, your quotation will not be considered further.
- (c) You shall submit one original of the **Form of Quotation**, and clearly marked "Original". In addition, you shall also submit one copy marked as "COPY". In case of any discrepancy between the Original and Copy, the Original shall prevail.
- (d) Your quotation(s) should be valid for a period of 30 days from the deadline for submission of the quotation/(s) as indicated below. If you withdraw your quotation during the validity period and/or refuse to accept the award of a contract when and if awarded, then you will be excluded from the list of Service Providers for the project for two years.

#### Submission and Opening

Your **Form of Quotation** with the required documents may be submitted electronically by email to the following address on or before **16.08.2023, up to 03.00 pm.**

Client's Address : Meghalaya Sate Watershed & Wasteland Development Agency  
(MSWWDA), Shillong, Meghalaya.  
E-mail : cfo.mswwda@gmail.com

- (e) Quotations shall be opened in public, in the presence of participating Service Providers' representatives who choose to attend, on **16.08.2023** at the following address.

Dy. Chief Executive Officer  
Meghalaya State Watershed and Wasteland Development Agency (MSWWDA)  
Soil and Water Conservation Department  
Government of Meghalaya  
Upper Nongrim Hills, Shillong.

#### Evaluation and Comparison

- (f) Quotations determined to be substantially responsive to this **Request for Quotation** will be evaluated by comparison of their offer prices. A quotation is not substantially responsive if it contains material deviations or reservations to the terms, conditions, and specifications in this **Request for Quotation**.
- (g) In evaluating the quotations, the Client will adjust for any arithmetical errors as follows:
  - (i) where there is a discrepancy between amounts in figures and in words, the amount in words will govern; and
  - (ii) where there is a discrepancy between the unit rate (where applicable) and the line-item total resulting from multiplying the unit rate by the quantity, the unit rate as quoted will govern; and

If you refuse to accept the correction/(s), your quotation will be rejected.

#### Award of Contract

- (h) The Client shall award the contract to the Service Provider whose quotation has been determined to be substantially responsive to this Request for Quotation and who has offered the lowest price quotation.
- (i) The Service Provider whose quotation has been accepted will be notified by the Client within **10** [*insert number of days*] **days** from the date of submission of quotation through the return of a copy of the **Form of Quotation** with **Acceptance** signed by the authorized representative of the Client.
- (j) The successful Service Provider shall sign the **Contract** governed by the annexed **Contract Terms and Conditions**. If Applicable, "In addition to the quoted price, the contract price shall include GST in India.

5. Further information can be obtained from:

Name : Mr. Nathanael Dkhar  
 (Chief Financial Officer)  
 Meghalaya Sate Watershed & Wasteland Development Agency  
 (MSWWDA), Shillong, Meghalaya.  
 E-mail : cfo.mswwda@gmail.com

- 6. The Client intends to apply funds from the **Asian Development Bank (ADB)** for eligible payments under the **Contract** resulting from this **Request for Quotation**.
- 7. Under ADB's Anticorruption Policy (1998, as amended to date) Service Providers shall observe the highest standard of ethics during the procurement and execution of such contracts. ADB may reject a proposal for award, and may impose sanctions or other remedial actions on parties involved, if it determines that the Service Provider recommended for award or any other party, directly or through an agent, has engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices or other integrity violations in competing for, or in executing, the Contract. At the time of submission of your quotation, you should not be in ADB's sanctions list. A firm/individual shall not be eligible to participate in any procurement activities under an ADB-financed, -administered, or -supported project while under temporary suspension or debarment by ADB pursuant to its Anticorruption Policy, whether such debarment was directly imposed by ADB, or enforced by ADB pursuant to the Agreement for Mutual Enforcement of Debarment Decisions.
- 8. You/your firm, joint venture partners, associates, parent company, affiliates or subsidiaries, including any subcontractors or suppliers for any part of the Contract, are not, or have never been, temporarily suspended, debarred, declared ineligible, or blacklisted by the client's country, any international organization, and other donor agency.

If so debarred, declared ineligible, temporarily suspended, or blacklisted, please state details (as applicable to each joint venture partner, associate, parent company, affiliate, subsidiaries, subcontractors, and/or suppliers):<sup>1</sup>

- (a) Name of Institution: \_\_\_\_\_
- (b) Period of debarment, ineligibility, or blacklisting (start and end date): \_\_\_\_\_
- (c) Reason for the debarment, ineligibility, or blacklisting: \_\_\_\_\_

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<sup>1</sup> Any such disclosure shall be forwarded by the Client to ADB.

9. You/your firms, joint venture partners', associates', parent company's affiliates or subsidiaries', including any subcontractors' or suppliers', key officers and directors have not been [charged or convicted] of any criminal offense (including felonies and misdemeanors) or infractions/violations of ordinance which carry the penalty of imprisonment.

If so charged or convicted, please state details:<sup>2</sup>

- (a) Nature of the offense/violation: \_\_\_\_\_  
(b) Court/Area of jurisdiction: \_\_\_\_\_  
(c) Resolution (i.e., dismissed; settled; convicted/duration of penalty): \_\_\_\_\_  
(d) Other relevant details:

10. You/your firm understands that it is your obligation to notify ADB should you/your firm, joint venture partners, associates, parent company, affiliates or subsidiaries, including any Subcontractors or Suppliers, be temporarily suspended, debarred or become ineligible to work with ADB or any other multilateral development banks, the client's country, international organizations, and other donor agencies, or any of your key officers and directors be charged or convicted of any criminal offense or infractions/violations of ordinance which carry the penalty of imprisonment.
11. Any misrepresentation that knowingly or recklessly misleads, or attempts to mislead may lead to the automatic rejection of the quotation/bid or cancellation of the contract, if awarded, and may result in remedial actions, in accordance with ADB's Anticorruption Policy (1998, as amended to date) and Integrity Principles and Guidelines (2015 as amended from time to time).
12. A bidder shall not have a conflict of interest. All bidders found to have a conflict of interest shall be disqualified.
13. Please confirm by e-mail the receipt of this request and whether or not you will submit the price quotation(s).

Sincerely,

\_\_\_\_\_  
(Client)

Chief Executive Officer  
Meghalaya State Watershed & Wasteland  
Development Agency Shillong

<sup>2</sup> Any such disclosure shall be forwarded by the Client to ADB.

# FORM OF QUOTATION (Services)

\_\_\_\_\_ [date]

To: \_\_\_\_\_ [Client's Name]

\_\_\_\_\_ [Client's Address]

\_\_\_\_\_

We offer to execute the \_\_\_\_\_ [name and number of Contract] in accordance with the **Contract Terms and Conditions** and the **Scope of Services** accompanying this Quotation for the Contract Price of \_\_\_\_\_ [amount in words and numbers] ( \_\_\_\_\_ ) [name of currency] \_\_\_\_\_.

We offer to execute the \_\_\_\_\_ [name and number of Contract] in accordance with the **Contract Terms and Conditions** and the **Scope of Services** accompanying this Quotation for the Contract Price of \_\_\_\_\_ [amount in words and numbers] ( \_\_\_\_\_ ) [name of currency] \_\_\_\_\_ per unit of output as described in the **Scope of Services**.

[Note: Attach a Price Schedule form to the Scope of Services.]

We propose to complete the performance of the services described in the **Contract** within the Completion Period indicated in the priced **Scope of Services**.

This Quotation and your written acceptance will constitute a binding Contract between us. We understand that you are not bound to accept the lowest or any Quotation you receive.

We hereby confirm that this Quotation complies with the Validity of the Offer condition imposed by the **Request for Quotation** document.

We: (a) are a national of an ADB member country; (b) have not been associated with the firm that prepared the terms of reference or engaged in the preparation of the Project for which the contract that is subject of this request for quotations was identified; (c) are not owned by the Client; (d) are not currently sanctioned or temporarily suspended by the Asian Development Bank; and (e) to the best of our knowledge, is not prohibited from being contracted in compliance with a decision of the United Nations Security Council.

Name of Service Provider: \_\_\_\_\_

Authorized Signature : \_\_\_\_\_

Name of Signatory : \_\_\_\_\_

Title of Signatory : \_\_\_\_\_

Address : \_\_\_\_\_

Telephone Number : \_\_\_\_\_

Email address (optional) : \_\_\_\_\_

## **ACCEPTANCE**

The Client accepts the Service Provider's offer to provide the service.

Name of Client : Meghalaya State Watershed and Wasteland Development Agency, MSWWDA

Authorized Signature :

Name of Signatory :Dr. Joram Beda, IAS

Date :

**CONTRACT**  
**Name of Country: India**

Project Name: **CLIMATE ADAPTIVE COMMUNITY BASED WATER HARVESTING PROJECT**

Name of Contract: **Geotechnical Investigation**

Contract No: **MSWWDA/ADB-14/35**

This Contract is entered into on \_\_\_\_\_ [date] day of \_\_\_\_\_ [month], \_\_\_\_\_ [year], between \_\_\_\_\_ [name of Client] (hereinafter called "the Client") on the one part, and \_\_\_\_\_ [name of Service Provider] (hereinafter called "the Service Provider") on the other part.

Whereas the Client has requested a quotation for \_\_\_\_\_ [description of services] to be performed by the Service Provider in accordance with the **Contract**, and has accepted the Quotation by the Service Provider in the amount of \_\_\_\_\_ [amount in words] \_\_\_\_\_ [amount in figures] hereinafter called "the Contract Price".

The Client and the Service Provider agree as follows:

1. The following documents shall be deemed to form and be read and construed as part of this Contract, viz:
  - a) **Form of Quotation**, with **Scope of Services** and **Appendix [and Price Schedule under Option B form of quotation]**; and
  - b) **Contract Terms and Conditions**;
2. Taking into account payments to be made by the Client to the Service Provider as hereinafter mentioned, the Service Provider hereby enters into this Agreement with the Client to execute and complete the performance of services under the Contract.
3. The Client hereby agrees to pay, in consideration of the successful performance of the services, the **Contract Price** as indicated and accepted in the **Form of Quotation**, under payment terms stipulated in the **Contract Terms and Conditions**.

IN WITNESS whereof the parties hereto have executed the **Contract** under Applicable laws.

**Signature and seal of the Client:**

For and on behalf of

**Signature and seal of the Service Provider:**

For and on behalf of

\_\_\_\_\_  
Name of Authorized Representative

\_\_\_\_\_  
Name of Authorized Representative



# CONTRACT TERMS AND CONDITIONS

Project Name: **Climate Adaptive Community Based Water Harvesting Project in Meghalaya State**

Client: Meghalaya State Watershed and Wasteland Development Agency, MSWWDA

Contract No. **MSWWDA/ADB-14/35**

## 1. Definitions

- (a) "Contract" means the agreement entered into between the Client and the Service Provider, together with the Contract Documents referred to therein, including all attachments, appendixes, and all documents incorporated by reference therein.
- (b) "Contract Documents" means the documents listed in the Contract, including any amendments thereto.
- (c) "Contract Price" means the price payable to the Service Provider as specified in the Contract, subject to such additions and adjustments thereto pursuant to the Contract.
- (d) "Completion" means the fulfilment of the committed services by the Service Provider in accordance with the terms and conditions set forth in the Contract.
- (e) "Client" means the entity purchasing the Services.
- (f) "Services" means the services the Service Provider will perform as specified in the Scope of Services in Appendix A.
- (g) "Service Provider" means the natural person, private or government entity, or a combination of the above, whose bid to perform the Contract has been accepted by the Client and is named as such in the Contract.
- (h) "ADB" is the Asian Development Bank.

## 2. Applicable Law

The Contract shall be interpreted in accordance with the laws of the Client's country.

## 3. Language

All communications and documents related to the Contract shall be in English.

## 4. Assignment

Any assignment of this Contract or of any rights hereunder, in whole or in part without the prior written consent of the Client shall be void.

## 5. Fraud and Corruption

This Contract shall be covered by the provisions of ADB's Anticorruption Policy (1998, as amended to date) and Integrity Principles and Guidelines (2015, as amended from time to time) that requires Borrowers (including beneficiaries of ADB-financed activity), as well as Service Providers and Contractors under ADB-financed contracts, to observe the highest standard of ethics during the procurement and execution of such contracts.

## 6. Performance of the Services

The Service Provider shall carry out the Services with due diligence and efficiency and shall furnish to the Client such information related to the Services as the Client may from time-to-time reasonably request. The Service Provider shall at all times cooperate and coordinate with the Client with respect to the performance of the Services.

**7. Required Performance Standards** (with attachments as necessary to be prescribed by Client.)

- (a) General Description
- (b) Specific Standards
- (c) Performance Parameters

Service Provider confirms compliance with above standards and parameters.

**8. Service Completion Schedule**

The services should be completed as per schedule indicated in the **Scope of Services** but not exceeding 3 to 6 months from the date of signing of contract.

**9. Fixed Contract Price**

The prices indicated in the **Form of Quotation** are firm and fixed and not subject to any adjustment during contract performance, subject to Clause 11 [Payment] below.

**10. Taxes and Duties**

The Service Provider shall be entirely responsible for all taxes, duties, license fees, etc., incurred until completion of the services to the Client.

**11. Payment**

Upon submission by Service Provider of claim and subsequent verification of the claim by Client, payment of the contract price shall be made in the following manner:

- (a) Advance payment (Optional) of 10% within 14 days of signing the contract, upon evidence of mobilization of service Provider.
- (b) In accordance with the Price Schedule, the amount resulting from multiplying the claimed and verified quantity of the item or activity with the unit price indicated in the accepted Form of Quotation.

**12. Resolution of Disputes**

The Client and the Service Provider shall make every effort to resolve amicably by direct informal negotiation any disagreement or dispute between them under or in connection with the Contract. In the case of an unresolved dispute, the dispute shall be settled in accordance with the provisions of the arbitration law or rules of India.

**13. Independent Service Provider**

Nothing contained in this Contract shall be construed as establishing or creating the relationship of master and servant, employer and employee or principal and agent between the Client and the Service Provider, or his employees or agents or other persons engaged by the Service Provider to perform any of the services.

**14. Intellectual Property Rights**

Intellectual Property Rights: (a) The Service Provider shall indemnify the Client from and against any and all claims, liabilities, obligations, losses, damages, penalties, actions, judgments, suits, proceedings, demands, costs, expenses and disbursements of whatsoever nature that may be imposed on, incurred by or asserted against, the Client during or in connection with the Services by reason of: (i) infringement or alleged infringement by the Service provider of any patent or other protected right, or (ii) plagiarism or alleged plagiarism by the Service provider.

#### **15. Failure to Perform**

The Client may terminate the Contract if the Service Provider fails to perform the services, in accordance with the above terms and conditions, in spite of a 14-day notice given by the Client, without incurring any liability to the Service Provider. In the event of such termination, the amount due under the Contract shall be subject to equitable adjustment.

#### **16. Termination Due to Integrity Violation**

The Client may terminate this Contract, in whole or in part, if the Service Provider, in the judgment of the Client has engaged in integrity violations in accordance with Clause 5 [Fraud and Corruption], in competing for or in executing this Contract.

#### **17. Other Grounds for Termination**

The Client may also terminate this Contract, in whole or in part, if the Service Provider becomes insolvent, bankrupt or gives the Client reasonable evidence of its inability to complete the Services as specified, or fails to correct any non-conformity in the Services or performs in bad faith by willfully not observing the terms and conditions of this Contract.

#### **18. Force Majeure**

The Service Provider shall not be liable for penalties or termination for default if and to the extent that its delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.

- (a) For purposes of this Clause, "Force Majeure" means an events beyond the control of the Service Provider and not involving the Service Provider's fault or negligence and not foreseeable. Such events may include, but not restricted to, act of Client in its sovereign capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions, and freight embargoes.
- (b) If a Force Majeure situation arises, the Service Provider shall promptly notify the Client in writing of such condition and the cause thereof. Unless otherwise directed by the Client in writing, the Service Provider shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by Force Majeure event.

#### **19. Accounts and Records**

- (a) The Service Provider shall keep accurate and systematic accounts and records in respect of the Services in such form and detail as are customary in its profession and are sufficient to establish accurately that the costs have been duly incurred.
- (b) Notwithstanding anything to the contrary stated herein, the Service Provider shall maintain accounts and records, including original receipts, invoices and other supporting documents evidencing payments made by the Service Provider under this Contract, for the period of the Services and for a period no less than 3 years after the expiration or termination of this Contract.
- (c) The Service Provider shall permit ADB to inspect the accounts, records, and other documents relating to the submission of bids and contract performance of the Service Provider and to have them audited by auditors appointed by ADB.

#### **20. Suspension of ADB Loan or Credit.**

In the event that ADB suspends the Loan or Credit to the Client, from which part of the payments to the Service Provider are being made, the Client is obligated to notify the Service Provider, with copy to the Client's representative, of such suspension within 7 days of having received ADB's suspension notice.

#### **21. Termination Notice Due to Non-payment**

If the Service Provider has not received payments due within the 28 days as provided for in Clause 11 [Payment], the Service Provider may immediately issue a 14-day termination notice.

## Appendix A

### SCOPE OF SERVICES

#### 1. Background

The MSWWDA desires to conduct the Geotechnical & Soil investigation (both Field & Laboratory) at various sub project sites proposed for constructing the Water Harvesting Structures and preparation of a detailed report in compliance with BIS/IS standards/ Code/guidelines to provide the designer with sufficiently accurate information, both general and specific, about the substrata profile and relevant **soil and rock parameters** at site on the basis of which the foundations for various water harvesting structures to be proposed & designed for ensuring the Sustainability.

The "Employer" on the project shall be **MSWWDA, Meghalaya**. The soil exploration work shall be performed by the "Geotechnical Investigation Contractor" or "Contractor".

#### 2. Objective

The objective of the geotechnical Investigation is to comprehensively study and confirm the subsoil conditions and establish the various soil & rock parameters and its behavior to assess the general suitability of site proposed for water harvesting structures to enable an adequate and economic design, to determine the changes that may arise in ground and environmental conditions, to plan the best method of construction, etc.

#### 3. Implementation arrangements

##### 3.1. Scope of works

This Scope of work covers the technical requirements for a Geotechnical & Soil investigation to be carried out at various Sub-Project sites and the submission of Geotechnical & Soil investigation report with the recommendation of a suitable foundation and water harvesting structure after conducting the lab test. The work shall include mobilization of all necessary equipment's, transportation & shifting of equipment's, preparation of temporary access to site/working area, providing necessary engineering supervision and technical personnel, skilled and unskilled labour, accommodation, storage, safety and securities of manpower & equipment's, arrangement of construction power & water, liasoning with local/government authorities etc., as required to be carried out.

The Scope of work is briefly given below **but not limited to**:

It covers complete soil exploration work (in soil & rock samples) including carrying out field tests and laboratory tests to evaluate soil parameters and preparation of detailed report including the recommendation.

The following are the field and laboratory tests: - (Confirming to the relevant IS Code)

1. Geo-Technical Exploration at various bore hole locations.
2. Visual & Engineering Classification of soil
3. Laboratory analysis of soil and rock samples (disturbed & undisturbed based on the test & IS Code provisions) to determine the index properties natural moisture content, Sieve/Grain size analysis, Water Absorption, Porosity Specific Gravity, Moisture Content, Bulk Density, Relative Density, Atterbergs limits, Hydrometer test, Permeability (Falling Head & Constant head), Unconsolidated undrained, Consolidation test (drained &

Undrained Test with the Measurement of Pore Water Pressure), Direct shear test, Unconfined Compression test, Heavy Compaction test (Modified Proctor test) Triaxial compression test, etc, chemical tests (pH, sulphate content and chloride content, Soil & rock sample as per the relevant IS code of practices.

4. Report preparation showing all the above test results including calculation of SBC, Standard Penetration Test results, Pile load capacity suggestion of foundation type and submission of report in triplicates etc. complete

The geotechnical investigations are to be carried out as mentioned in Annexure –I.

The numbers of boreholes, locations and depth of boreholes etc. may vary during course of investigation based on actual site condition. The field and laboratory testing works including analysis & design shall be performed as per provision of Bureau of Indian Standards(IS).

Work on Priority Water Harvesting Structure (to be provided by the employer to the successful firm) needs to be undertaken first by the agencies and test results need to be submitted sequentially on a continuous basis rather than all at once at the end of the work duration.

In case the planned boring is located in soft/marshy/waterlogged ground, the contractor shall make an effort to construct a temporary platform of sand bags/wooden planks for which contractor has to make his own arrangements and consult with Employer for any extra cost that's not mentioned elsewhere in the TOR/ BOQ.

### 3.2. Field Testing Program

#### 3.2.1.1. Soil Borings

The exploratory boring shall be carried out at specified locations as per IS: 1892 – 1979 using wash or shell and auger boring. The soil borings shall consist of minimum 150mm diameter hole using temporary flush jointed casings as per good practice.

#### 3.2.1.2. Soil Sampling & Insitu Tests

Standard penetration test (SPT) and undisturbed samples shall be carried out at 1.5m intervals or at change of strata starting from 1.50 m depth from existing ground level and unless undisturbed soil sample to be collected at 2.0m or 2.5m interval in clayey soil only. If UDS cannot be collected, this shall be replaced by the SPT.

The SPTs shall be performed as per the procedure of IS: 2131-1981 in all type of soils. The SPT blow counts shall be noted for each 150mm penetration of the split-spoon sampler. The blow counts shall be terminated when combined blow counts exceed 100 (called as Refusal) during last 300mm penetration of the sampler and should be recorded as refusal. The sample collected from split spoon sampler shall immediately be identified, labeled with borehole number, sample number, depth and preserved for laboratory testing.

Undisturbed samples shall be collected in good quality thin-walled seamless tubes conforming to IS: 1892 – 1979 & IS: 2132 - 1986. UDS shall be replaced by SPT in cohesion less strata or where UDS cannot be collected from hard clay (N>30) or partly cohesive soil (N>50).

The tube shall be properly labeled mentioning relevant details of sample and marked and capped immediately after the sample is recovered from borehole to ensure no loss of moisture with time while retained in tube with proper labeling and shall be examined for colour, consistency, plasticity, grain size and other special characteristics.

The depth of ground water table where it is struck during boring/ drilling shall be carefully noted and recorded every day in each borehole prior to resume the day's work. To ascertain the depth of water

table, water table should be recorded after a minimum of 24 hours of boring.

**3.2.1.3. Test Criteria:**

Unless otherwise a site-specific geotechnical program/scheme is given, the following broad scope and termination criteria of boring shall be followed as general guidelines:

Location	Minimum Scope of Geotechnical Investigations	Tentative Boring Termination Criteria (IS 1892:1979, IS 2131,2132)
At the location as shown / marked in site PLAN /Drawing	Six Boreholes at every specified location	1. 10.0 m in soil or upto refusal (N>100), whichever is earlier in compliance with relevant IS Codes

Depending on the ground profile and design and project requirements, the employer may decide to vary/ modify the scope and termination criterion of boring.

If the strata with Standard Penetration Test (SPT)  $N'$  value greater than 100 with characteristics of rock is met with, prior to the specified depth, the bore hole shall be advanced further by chiselling. Chiselling shall be continued for a maximum depth of 20 cms or upto 2 hours whichever is earlier. During chiselling rock fragments shall be collected

**3.2.1.4. Storage & Transportation of Samples**

The contractor shall store the samples in a place away from the direct sunlight. The overnight storage of the samples shall be done at secured locations of the field camp. The contractor is solely responsible for the safety of the samples. The samples shall be transported to the contractor's laboratory on a regular basis.

**3.2.1.5. Boring Locations & Details**

The Employer shall provide the boring locations. The contractor shall bring all survey equipment to set out the test locations and to establish the ground level and co-ordinate accurately with respect to nearby reference points and bench mark, which will be supplied by Employer.

**3.2.1.6. Field Boring Logs & Employer Updates/Approvals**

During the course of the exploration work, the contractor's field representative on a regular basis shall maintain a clear communication with the Employer's representative and Project Consultant of the project.

**3.2.1.7. Personnel for Geotechnical Investigation**

The exploration contractor should ensure that the borings are supervised on full-time basis by experienced and qualified personnel who shall maintain borings logs including the soil type, nature of sample, soil moisture & consistency, SPT blow counts, groundwater observation and apparent origin (fill/alluvium/colluviums/residuum etc.). The laboratory work shall be under direct control of a qualified geotechnical engineer of minimum 5 years of experience. Qualified (minimum B.E./ B.Tech) and experienced geotechnical engineer and geologist shall prepare the soil report encompassing the aspects as indicated in Technical Report of RFQ (Request for quotation)The contractors must have their own geotechnical-testing laboratory.

**3.2.2. Laboratory Testing Program**

All soil and water samples shall be transported from the site on a regular basis to the exploration contractor's laboratory for testing. The laboratory testing work shall not be subcontracted. The laboratory tests on soil samples shall be done by following the relevant IS guidelines. Soil & rock tests shall be performed on the selected samples as per the scope of work and BOQ. Some additional tests may be required to characterize other geotechnical properties.

**3.2.2.1. General Terms and Conditions**

The explored quantities may vary due to variability in the subsurface conditions. The contractor's contract period and rates shall be deemed to include for the monsoon and any inclement weather he may experience during the course of his investigation period.

The selection of the contractor shall be based on the contractor's ability to perform the work for the above

scope, contractor's reputation in the general area, experience on such kind of work and the competitiveness of his costs. If the Employer decides to hire the contractor for the exploration work, the contractor shall engage in a formal contract with the Employer.

The terms of the contract shall specifically require the contractor to indemnify the Employer and owner of any liabilities on account of injury to his personnel and damage to the property & equipment, while carrying out the exploration work. The geotechnical investigation contractor is responsible for health and safety for his site workers and personals. The Employer shall not be responsible for any such future damages and claims, if any arise, due to non-compliances of this clause and government rules whatsoever the reason may be. The Contractor will be responsible for observing and obeying all labour laws, regulations and statutory and in case of his failure to observe the same, Employer, shall deduct any expenditure that may be incurred by it for setting right the shortcoming including arrear payment of wages to workers any fines and penalties, expenses incurred on settlement etc. The Contractor shall indemnify Employer, against all such compensations/ claims.

The Employer would expect a cordial relationship with the contractor during the course of work. The contractor is expected to provide the services on the project in a professional manner befitting his reputation. Any work not found to be as per specifications by Employer will have to be redone at the contractor's own cost to the satisfaction of Employer. In case of failure to rectify the defects, Employer will get the work rectified at contractor's risk and cost.

**The time is of essence in the project. If necessary, additional resources should be deployed to complete the work in scheduled time by Contractor without any additional cost to the Employer.**

Therefore, the contractor is expected to manage his work efficiently for a timely completion, failing which the Employer will be compelled to strictly enforce the liquidation clause, if any of the contract.

#### **4. Dates, completion schedule, venues and other relevant details**

The Intended Completion Date for the whole of the Works shall be **3 to 6 Months from the date of agreement.**

The successful contractor shall submit a tentative program for the entire work furnishing field work, laboratory testing, draft final and approved final soil report submission considering the priority of works, if any, for the approval of Employer within 7 days of award of contract. The contractor shall accordingly plan and mobilize adequate number of rigs and accessories and make necessary arrangements to transfer the collected samples to his laboratory to fulfill the project schedule.

#### **5. Expected outputs/ deliverables/ reports**

##### Geotechnical Report

The exploration contractor shall prepare a comprehensive Geotechnical Report summarizing the field- and laboratory testing programs. Area/ stretch/ structure wise report shall be submitted if desired by Employer. Geotechnical Report shall include but not limited to the following:

- i. Geological history and geographical background of the area
- ii. Total scope of work and a plot plan showing locations of all tests.
- iii. Brief description of procedure adopted for field and laboratory tests.
- iv. Detailed Bore log in approved format indicating agency, bore-hole number, name of supervisor, dimensions, methods of advancing exploration such as by hand tools, blasting, boring etc, all field observations and results including R.L., co-ordinate (shall be supplied by the employer), GWT after proper modifications in light of laboratory test along with commencement and completion date. Observations of peculiar conditions such as artesian conditions, sand blow, water loss, sudden penetration of drill rod etc.

- v. Laboratory identification and results in approved tabular and graphical form with a summary of all test results for individual borehole/ field test
- vi. True cross sections/ profile of all boreholes &/ or trial pits with reduced levels, position of borehole/ trial pit, thickness and classification of each stratum, GWT, N value, other in-situ tests, sampling at different depths for obtaining realistic idea about the stratigraphy and consistency.
- vii. All geotechnical parameters like natural moisture content & bulk density, specific gravity, consistency limits and particle size distributions, consolidation test (Cc), shear strength test ( $c$ ,  $\phi$ ), co-efficient of permeability ( $k_v$ ,  $k_h$ ) etc. whichever is applicable along with all relevant graphs, charts, diagrams like stress-strain curves, Mohr's Circle, e-log p, time-settlement curve, grain size curve.
- viii. Safe bearing values for strip, isolated, spread footings and raft at the anticipated foundation levels.
- ix. The most suitable alternative types of foundation, if strip and isolated spread footings do not appear to be suitable. Particularly, under these circumstances, discuss the relative merits of different types of piles, having regard for the nature of the overburden and the condition of the bearing stratum. Include allowable bearing values and other criteria for piles.
- x. The modulus of subgrade reaction for design of mat foundations.

Three (3) copies of final geotechnical report (which includes all the reports with all data) of soil & rock tests shall be submitted to the Employer / Consultant within the specified time for a specific Area/ stretch/ structure. The Contractor shall modify/finalize the report in mutual consultation with the Employer / Consultant, if necessary. All design criteria, methods of analysis and calculation (if required) along with relevant references shall be furnished in detail. Sufficient number of good quality colored photographs covering site condition, drilling operation and in-situ tests in various structures, sampling and storage etc. shall be taken during the investigation works and shall be submitted with each report.



## Annexure - I: Price Schedule

Sl. No.	Item Description	Unit	Quantity	Rate (INR)	Amount (INR)
1	<b>Transportation:</b> Transportation charges to carry all necessary machineries, manpower to the site and withdrawal after completion of filed work including vehicle halting charges, lodging etc.	Job	1	L.S.	
1.1	<b>Shifting:</b> Shifting of drilling equipment and other accessories from one site to another.	Per shift	15 Nos		
1.2	<b>Boring:</b> Making boreholes by wash/auger/ shell of 150mm diameter size boring up to the maximum depth of 10.0m from E.G.L. or up to a refusal (N>100) whichever comes earlier including conduction of SPT at 1.5m interval or at change of strata, collection of disturbed, undisturbed soil sample at 2.0m interval in normal soil only (except gravelly deposits, weathered rock/rock strata etc.) as per relevant IS code of practices and submission of reports etc. complete.				
<b>2</b>	<b>West Garo Hills (WGH)</b>				
2.1	Dama Lake	Nos	6(Six)		
2.2	Rongchi	Nos	6(Six)		
2.3	Galbalsak	Nos	6(Six)		
2.4	Walli	Nos	6(Six)		
2.5	Rongbilbang	Nos	6(Six)		
<b>3</b>	<b>North Garo Hills (NGH)</b>				
3.1	Rongge	Nos	6(Six)		
3.2	Jolding	Nos	6(Six)		
3.3	Motcholpara	Nos	6(Six)		
<b>4</b>	<b>East Garo Hills (EGH)</b>				
4.1	Breng	Nos	6(Six)		
<b>5</b>	<b>South West Garo Hills (SWG H)</b>				
5.1	Golgola	Nos	6(Six)		

5.2	Hullu	Nos	6(Six)		
5.3	Chelapara	Nos	6(Six)		
5.4	Paglapara	Nos	6(Six)		
<b>6</b>	<b>South Garo Hills (SGH)</b>				
6.1	Mangrang	Nos	6(Six)		
6.2	WageChiring (Badim)	Nos	6(Six)		
<b>7</b>	<b>Visual &amp; Engineering Classification of soil &amp; Laboratory Analysis</b>				
<b>7.1</b>	Visual & Engineering Classification of soil & Laboratory analysis of soil and rock samples (disturbed & undisturbed based on the test & IS Code provisions) to determine index properties natural moisture content, Sieve/Grain size analysis, Water Absorption, Porosity Specific Gravity, Moisture Content, Bulk Density, Relative Density, Atterbergs limits, Hydrometer test, Permeability (Falling Head & Constant head), Unconsolidated undrained, Consolidation test (drained & Undrained Test with the Measurement of Pore Water Pressure), Direct shear test, Unconfined Compression test, Heavy Compaction test (Modified Proctor test) Triaxial compression test, etc, chemical tests (pH, sulphate content and chloride content, if required for soil & rock sample as per the relevant IS code of practices.	Nos	15 Nos		
<b>8</b>	<b>Report preparation and Submission</b>				
8.1	Comprehensive Report preparation showing all the above test results including calculation of SBC, Standard Penetration Test results, Pile load capacity suggestion of foundation type and submission of report in triplicates etc.	Job	1	L.S.	
	<b>Sub Total</b>				
	<b>GST @ 18%</b>				
	<b>Grand Total</b>				

